

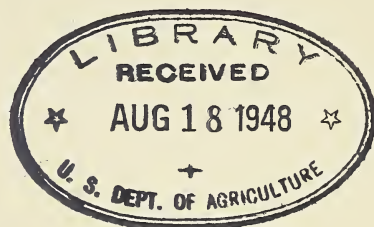
Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

114
Ad 47G
c 3

Major Economic Trends in the Dry Edible Bean Industry

Issued December 1938



By

REED K. POND

*Assistant Agricultural Economist
Economic Analysis Unit
General Crops Section*



UNITED STATES DEPARTMENT OF AGRICULTURE

Agricultural Adjustment Administration

Division of Marketing and Marketing Agreements

CONTENTS

	Page
Scope of the industry	1
Production trends	2
Prices	7
Movement	15
Foreign trade	16
Freight rates	17

LIST OF CHARTS

CHART No.

1. Production trend and acreage of dry beans in the United States, 1922-38	3
2. Production trends of dry beans: White classes, 1922-37	4
3A. Production trends of dry beans: Colored classes, 1922-37	5
3B. Production trends of dry beans: Colored classes, 1922-37	6
4. Production trends of dry lima beans, 1922-38	7
5. Production trends of dry beans by areas, 1922-38	8
6. Acreage of dry beans by areas, 1924-38	9
7. Yield per acre of dry beans in principal States and the United States, 1922-38	10
8. Production and farm price of United States dry beans and index of industrial workers income, 1922-38	11
9. Production and prices of dry beans by classes, 1922-37	13
10. Production, carry-in, and prices of dry lima beans, 1922-37	14
11. Carlot freight rates on dry beans from producing areas to representative destinations	16

APPENDIX—TABLES

TABLE No.

1. United States supply, foreign trade, and domestic disappearance of dry edible beans, 1922-23 to 1938-39	18
2. Production of dry beans in the United States by commercial classes, 1922-37	19
3. Production of dry beans by areas, 1922-38	20
4. Acreage (harvested) of dry beans by areas, 1924-38	20
5. Prices of principal classes of dry beans, United States farm price and index of income of industrial workers, 1922-37	21
6. Production of pea, medium, and small white beans by States, 1927-37	21
7. Production of Pinto beans by States, 1927-37	22
8. Production of Great Northern beans by States, 1927-37	22
9. Carload freight rates on dry edible beans	23
10. Dry beans: United States imports from, and exports to, principal countries of origin and destination, 1933-35	23

MAJOR ECONOMIC TRENDS IN THE DRY EDIBLE BEAN INDUSTRY

By REED K. POND, *Assistant Agricultural Economist, Division of Marketing and Marketing Agreements*¹

Production and use of dry edible beans have been increasing almost steadily in the United States since the early 1920's. Large and fairly distinct agricultural areas have become more dependent on returns from their dry bean crops for considerable parts of their cash incomes.

The western States, in particular, in recent years have been gaining in relative importance in the dry bean industry. Proportionately greater increases in the production of Baby Lima beans in California and of Great Northern beans in the Idaho area have been pertinent factors in a changing situation, which includes a diminished foreign trade.

This study is an attempt to assemble such available data and facts as might assist in more adequately understanding economic conditions relating to the changes in the production and marketing of dry edible beans.

SCOPE OF THE INDUSTRY

The United States harvested an average annual crop of 12,179,000 bags of beans, composed of about 20 distinct commercial classes, from an average of 1,620,000 acres in some 16 States during the 5-year period 1932-36. The average annual total value of these beans to farmers was in excess of \$35,000,000, ranging from a low of slightly over \$20,000,000 in 1932 to a high of over \$55,000,000 in 1936.

Six States produced an average of 93.1 percent of all beans harvested during the period. In order of importance during the period (1932-36) State percentages of average United States production were as follows: Michigan, 34.7 percent; California, 29.1 percent; Idaho, 10.3 percent; New York, 8.5 percent; Colorado, 7.1 percent; and New Mexico, 3.4 percent. California production exceeded that of Michigan in 1936 and 1937, but Michigan's production probably will be largest in 1938. Colorado produced more beans than New York in 1935 and 1936, but less in 1937 and probably slightly less in the 1938 season.

Of the average total production for the 5 years, 1932-36, Pea and Medium White beans comprised 35.8 percent of the average; Pintos, 11.7 percent; Great Northerns, 10.6 percent; Standard Limas, 8.2 percent; Baby Limas, 5.0 percent; Red Kidneys, 4.8 percent; Pinks, 4.7 percent; Blackeyes, 4.5 percent; and California Small Whites, 3.1 percent. The last-named class amounted to over 6 percent of the 1937 crop.

¹ The writer is indebted to Dr. E. W. Braun, of the Division of Marketing and Marketing Agreements, for his counsel and direction in the planning and preparation of this study; to F. L. Lyons, of the Federal-State Market News Service, San Francisco, and J. E. Barr and G. Burmeister, of the Bureau of Agricultural Economics, for their cooperation, suggestions, and criticisms.

Approximately 90 percent of Pea beans, the most important commercial class, are grown in Michigan. Pintos are grown mainly in Colorado and New Mexico. About 58 percent of Great Northerns are produced in Idaho, with Wyoming, Montana, and Nebraska averaging, respectively, 21, 14, and 6 percent of Great Northern production. The other above-named classes, except Red Kidneys, are produced almost entirely in California. Red Kidneys are grown principally in New York, Michigan, and California, these States averaging 56, 32, and 9 percent, respectively, of Red Kidney production.

A large part of the annual Pea bean crop is purchased by the canning industry for canning purposes. To a lesser extent some other classes such as Red Kidney, California Small White, and Great Northern beans are canned also.

Most dry beans are sold through established trade outlets from grower to consumer, usually on fairly uniform grade bases.

In the principal bean-producing States fairly large numbers of growers and dealers belong to their respective cooperative and marketing organizations. These associations have been sources of much valuable information and assistance both to their members and to the governmental units charged with the duty of aiding in the solution of the many problems of the dry bean industry.

PRODUCTION TRENDS

Production of dry edible beans in the United States declined from over 10,000,000 bags of 100 pounds each in 1918 to 6,042,000 bags in 1920, but has since increased, on the average, until in the 1937 season the record crop of 15,839,000 bags was produced. Production averaged 11,927,000 bags during the 5-year period, 1927-31, and 12,179,000 bags in the 5 years, 1932-36. Production for 1938 is indicated to be in excess of 14,850,000 bags, or the second largest crop on record. (See chart 1.)

Harvested acreage of beans increased almost steadily from 1924 (1,584,000 acres) to the all-time record acreage of 1930 (2,159,000 acres). Since the latter year harvested acreage has ranged from a low of 1,431,000 acres in 1932 to a high of 1,885,000 in 1935. Harvested acreage was 1,721,000 acres in 1937, and the indicated acreage for harvest in 1938 is 1,691,000 acres or only slightly lower than in 1937. (See chart 1.) Harvested acreage averaged 12 percent less in the 5 years, 1932-36, than during the 5-year period, 1927-31, whereas production averaged 2 percent greater during the later period than during the earlier 5 years.

From 1932 to 1936 the United States average annual yield per acre of beans ranged from a low of 715 pounds in 1936 to a high of 780 pounds in 1934, but from 1924 to 1931 yield in only the 1925 season exceeded 700 pounds per acre. The 1925 yield was 725 pounds. The record 1937 yield was 920 pounds, and a yield of approximately 880 pounds is indicated for 1938.

Hence, in recent years yield has been an important factor contributing to the increase in the trend of the United States production of beans.

An average of 1,986,000 acres of beans was planted during the 5-year period, 1927-31, and an average of 1,842,000 acres, or 92.7 per-

cent, was harvested; an average of 1,904,000 acres was planted during the 5 years, 1932-36, but an average of only 1,620,000 acres, or 85.3 percent, was harvested. Average abandonment during the latter period, therefore, was more than double that of the former (1927-31) period. Colorado accounted for 59.2 percent of the abandonment in the later period, whereas California, Idaho, Michigan, and all other

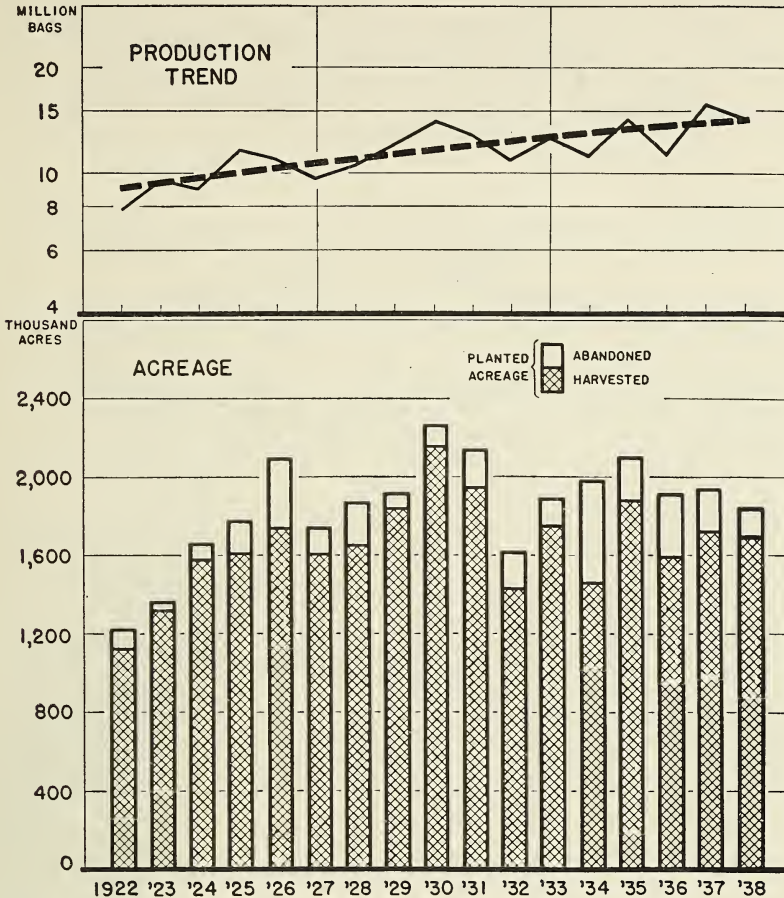


CHART 1.—PRODUCTION TREND AND ACREAGE OF DRY BEANS IN THE UNITED STATES, 1922-38 (1938 figures preliminary).

Production of dry beans in the United States has been rising steadily since the early 1920's. This is shown clearly by the trend line in the upper chart.

Harvested acreage of dry beans increased rapidly from 1922 to 1930. The decline in both harvested and planted acreage from 1930 to 1932 was followed by another upward trend, particularly in planted acreage. Abandonment was especially heavy in the drought years, 1934 and 1936.

States, contributed, respectively, 0, 1.4, 13.0, and 26.4 percent of the average acreage abandoned in those years.

With acreage at 1935 levels (1,885,000 acres harvested, 2,104,000 acres planted) and yield at 1937 levels (920 pounds per acre) a crop of beans of over 17,000,000 bags is possible. The average of the 1930

and 1931 harvested acreages, and 1937 yield, would produce nearly 19,000,000 bags of beans. Only very large increases in domestic or foreign demand could absorb such unusually heavy supplies.

The apparent persistent tendency to increase planted acreage, however, indicates that dry beans, as a whole, have had a comparative

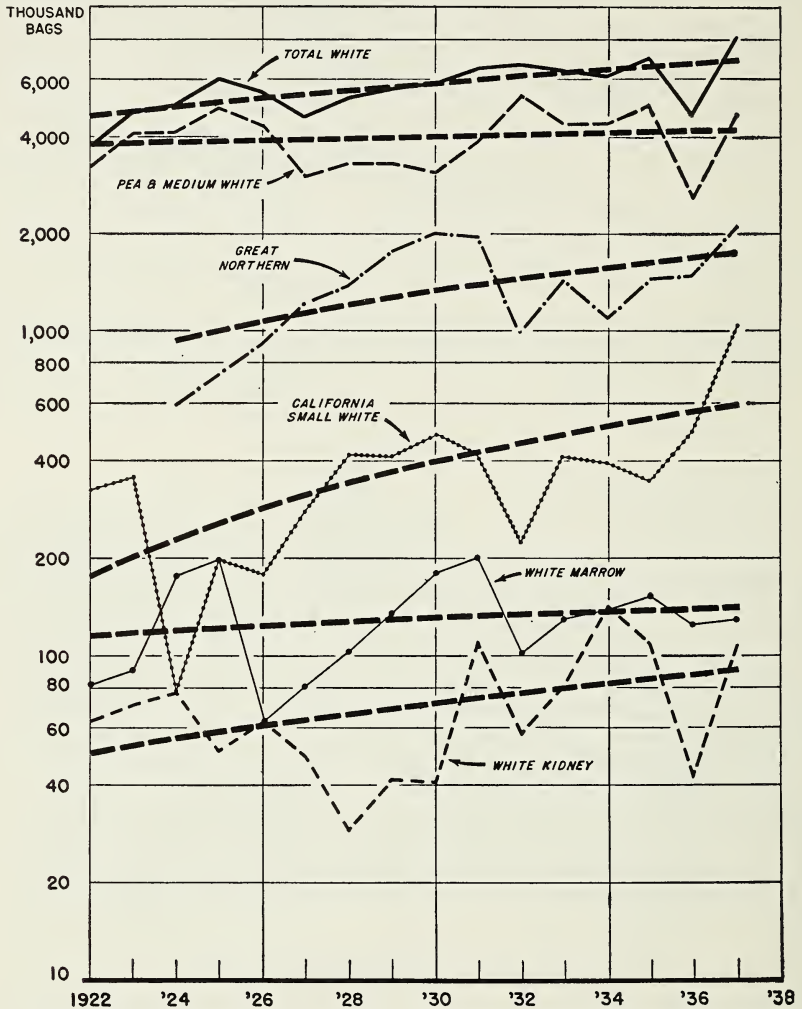


CHART 2.—PRODUCTION TRENDS OF DRY BEANS: WHITE CLASSES, 1922-37.

The substantial increase in total production of all white beans during the period 1922-37, was due principally to the relatively large increases in the production of Great Northern and California Small white beans.

advantage in price or net return per acre over other crops competing for the land on which beans are grown. If beans did not return the greatest net profit from the use of the land it seems logical that growers would plant some other crop instead of beans, or let the land lie fallow. The highest anticipated net return to the grower, based on

estimated costs, prices, and yields, is the usual and logical deciding factor in his selection of what to plant. In some States varieties of beans compete with one another for the use of land.

There appears to be some inclination on the part of bean growers to reduce acreage in years following seasons of relatively low bean

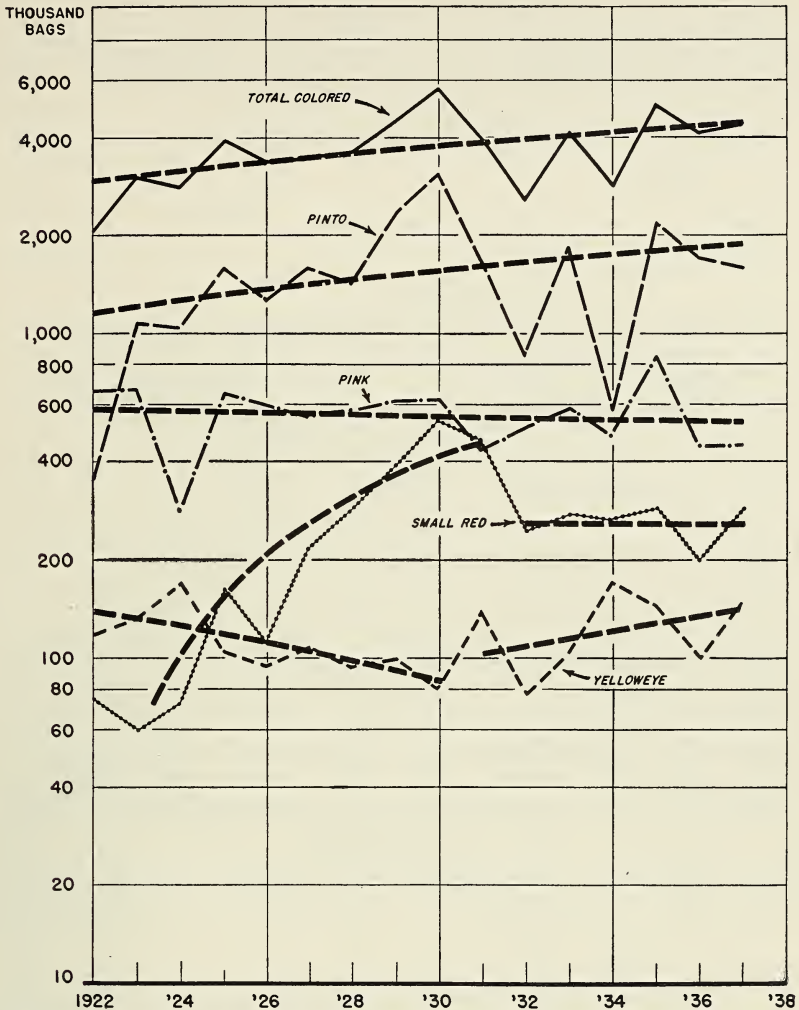


CHART 3-A.—PRODUCTION TRENDS OF DRY BEANS: COLORED CLASSES, 1922-37.

The total production of all colored classes has increased; the production of Pink beans, however, has decreased slightly, reflecting the competition from Pinto beans. (Total colored includes Blackeye, Red Kidney, and Cranberry beans shown in chart 3-B.)

prices and to increase acreage in years following seasons of relatively high bean prices. On the average, a change in the United States season average farm price of beans of 70 cents per bag is associated

with an average direct change in the United States acreage of beans of 100,000 acres in the year following the price change.

Production trends of most of the principal commercial classes of dry beans also have been upward since 1922. Production of Pink beans only has been decreasing progressively during the entire period,

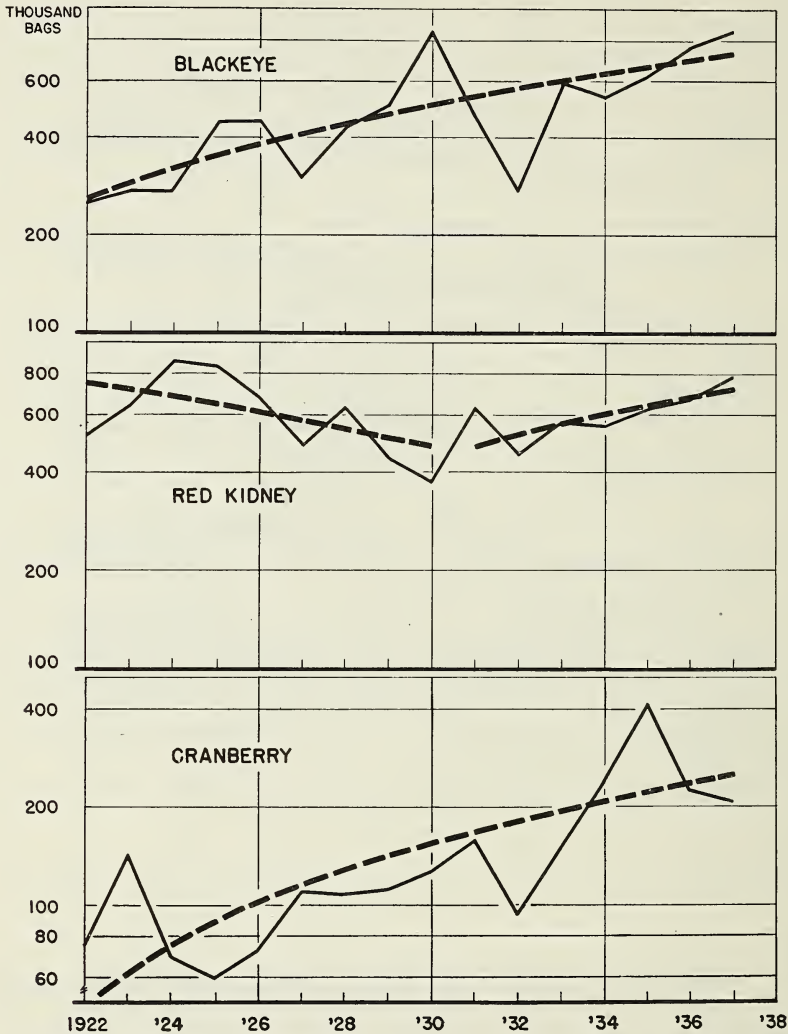


CHART 3-B.—PRODUCTION TRENDS OF DRY BEANS: COLORED CLASSES, 1922-37.

The production of Blackeye and Cranberry beans increased rapidly during the period, 1922-37, whereas the trend of Red Kidney bean production has been rising only since 1930.

whereas Yelloweyes and Red Kidneys followed downward trends until 1930 but have since approached previous high production levels. The production of Small Red beans increased sharply until 1930, then declined to about the level of 1927 and has remained since 1932 at

approximately that volume. See charts 2 to 4, drawn to logarithmic scale to show proportional changes in production.²

Baby Lima, Great Northern, California Small White, Blackeye, White Kidney, and Cranberry beans have had the largest proportional increases in production and have accounted for a large part of the increase in the total production of beans.

Of the four principal geographical producing areas, which include (1) States east of the Mississippi River; (2) Colorado, New Mexico, Arizona, and Kansas; (3) Idaho, Montana, Wyoming, and Nebraska; and (4) California, the largest proportional increase

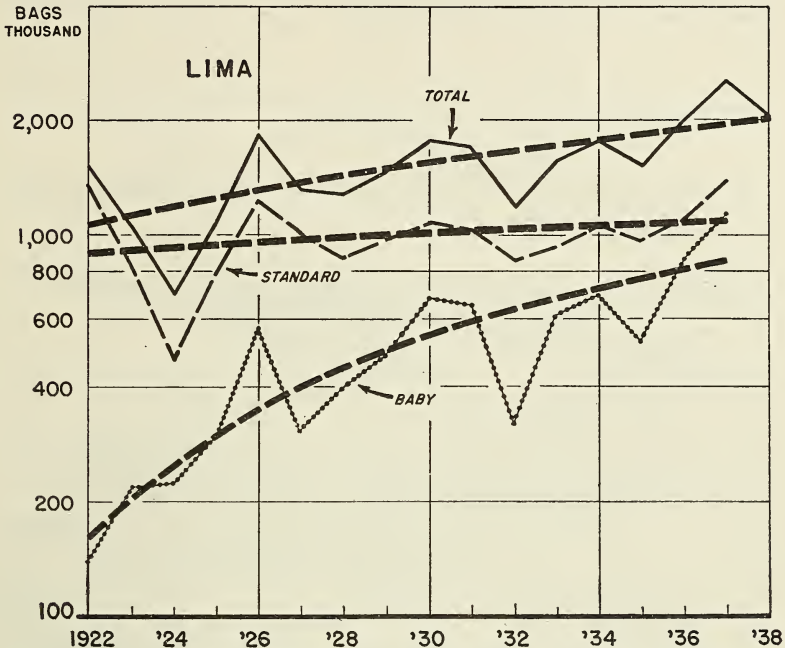


CHART 4.—PRODUCTION TRENDS OF DRY LIMA BEANS, 1922-38 (1938 FIGURES PRELIMINARY).

The rise in Baby Lima bean production since 1922 has been spectacular in character. The increase in Standard Lima bean production has been more gradual. Only Pea bean production exceeded that of all Lima beans during the 5-year period, 1932-36.

in bean production for the period, 1922-37, took place in the Idaho area, and the smallest increase took place in the Colorado area. (See chart 5.)

PRICES

The principal factors apparently influencing changes in the United States farm price of all beans are (1) changes in the annual production of beans and (2) changes in the income of bean consumers, as measured in the analysis by an index of industrial workers' income. Changes in demand resulting from changes in consumers' income

² All trend lines in this study are fitted mathematically.

appear to have, on the average, the greater influence on prices. For example, during the period 1922-29, when consumers' income remained comparatively stable, prices seem to have been influenced almost entirely by changes in the production of beans. However,

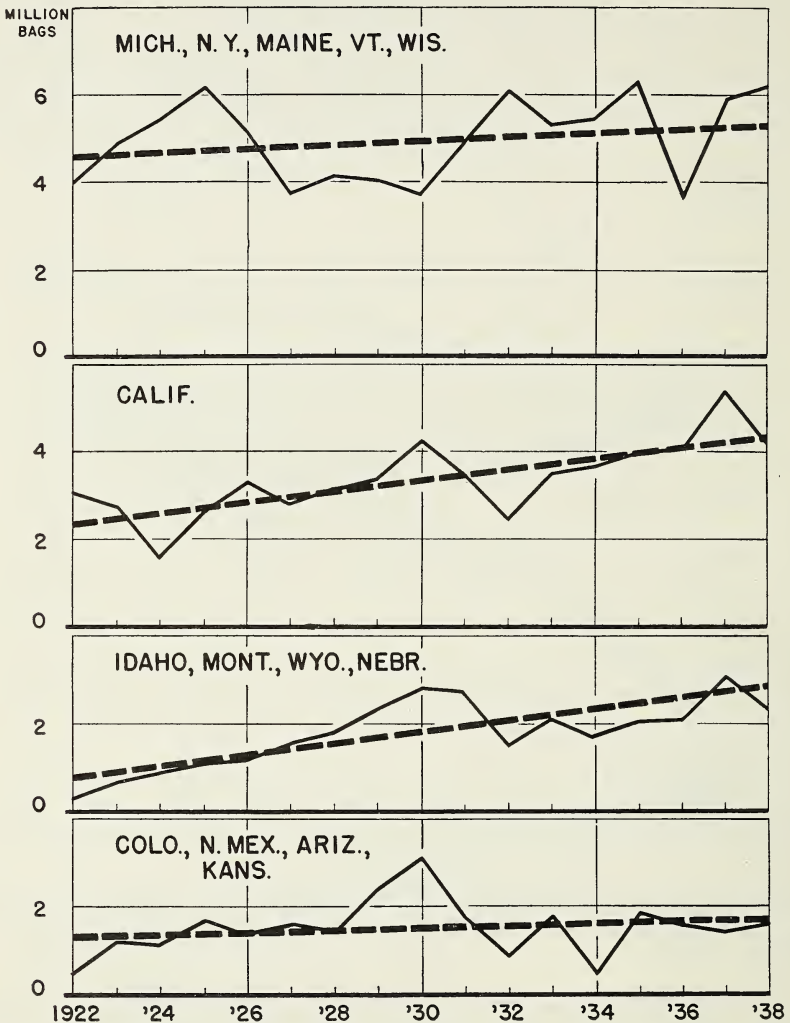


CHART 5.—PRODUCTION TRENDS OF DRY BEANS BY AREAS, 1922-38 (1938 figures preliminary).

Of the four principal bean-producing areas the increase in production in the Idaho area was relatively greatest during the 1922-38 period, and the increase in production in the Colorado area was smallest.

when incomes dropped rapidly from 1929 to 1932 and rose steadily from that low point to the comparatively high levels of 1936, prices closely followed the movement of consumers' income, whereas only the very large crops of 1935, and possibly 1937, seem to have had

sufficient influence to cause prices to deviate substantially from the direction in which incomes were moving. These relationships are indicated in chart 8.

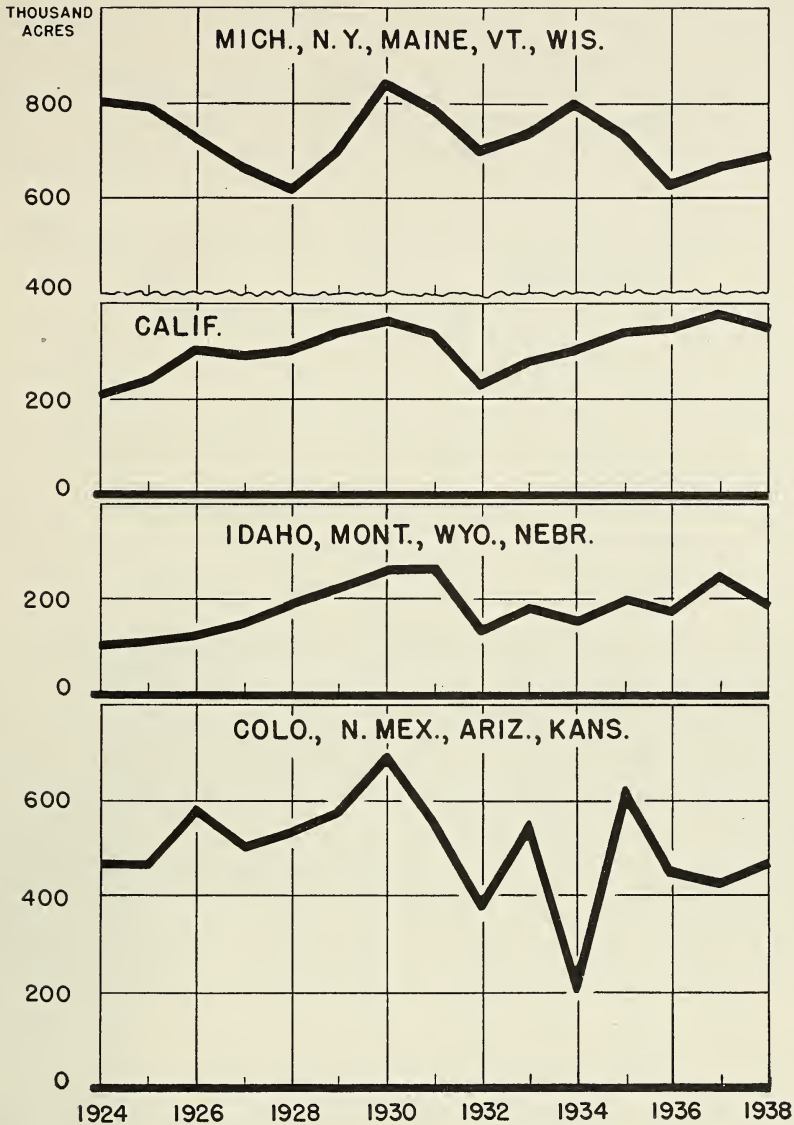


CHART 6.—ACREAGE OF DRY BEANS BY AREAS, 1924-38 (1938 figures preliminary).

Harvested acreage fluctuates most in the Colorado and Michigan areas and least in California and the Idaho area.

Production of beans varies from year to year, whereas consumers' income tends to move more slowly and over longer periods of time. Production is a function of acreage and yield, and consumer demand

is largely a function of industrial pay rolls and employment and consumers' wants. And, as indicated above, changes in the price of beans are mainly a function of changes in bean production and consumer demand.

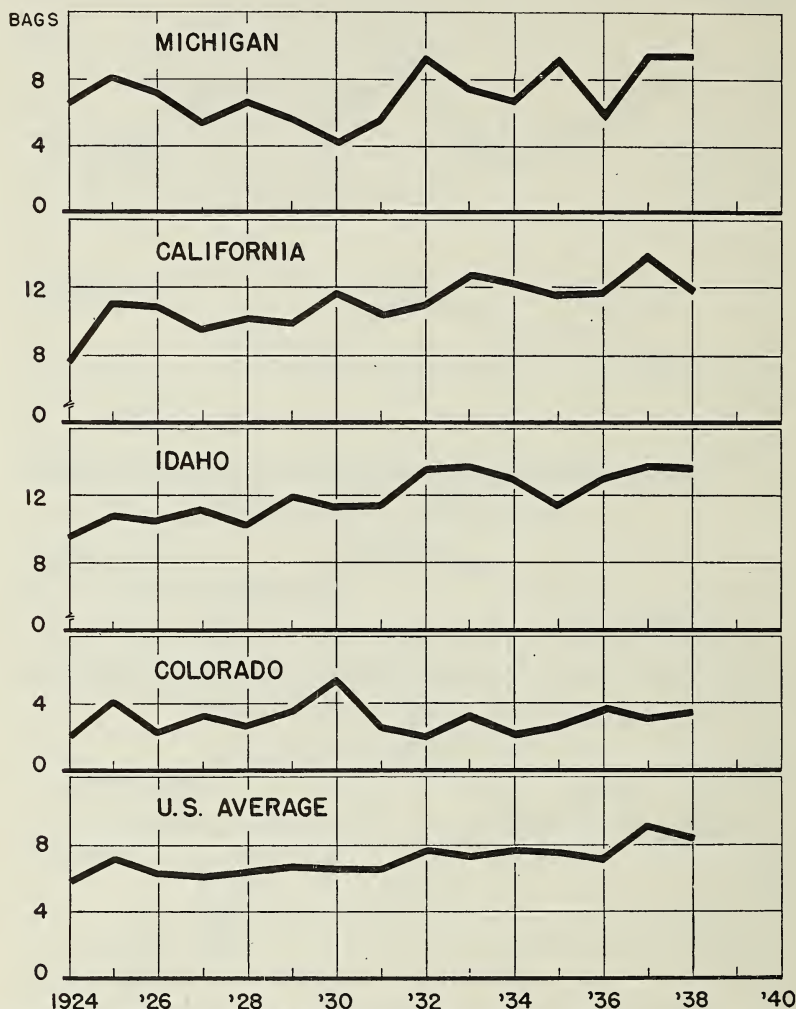


CHART 7.—YIELD PER ACRE OF DRY BEANS IN PRINCIPAL STATES AND THE UNITED STATES, 1922-38 (1938 figures preliminary).

The increase in the United States average yield per acre since 1930 indicates that: (1) Better land, as a whole, has been used in recent years for growing beans; (2) cultivation of bean acreage is generally more intensive; or, (3) irrigated land has been used more extensively for growing beans, particularly, in Idaho and California. In these two States yields average much higher and fluctuate relatively less than yields in Michigan and Colorado.

The grower has a limited influence over production, and that is confined mostly to his action of increasing or decreasing his bean acreage. The grades of land used for growing beans, intensity of culti-

vation, and the amount and kinds of fertilizer used, are controllable factors; hence, with all other conditions remaining equal, they would affect yield per acre and consequently production.

Preliminary technical analysis of bean prices indicates that, at relatively low levels of consumers' buying power, large supplies tend to bring smaller returns to growers than small supplies. Except in periods of successive seasons of price declines like the one prevailing from 1929 to 1932, some advantage from carrying over stocks from years of large supplies to subsequent years is indicated. All of the principal bean-producing areas stand to gain, with varying benefits, from such carry-over of stocks.

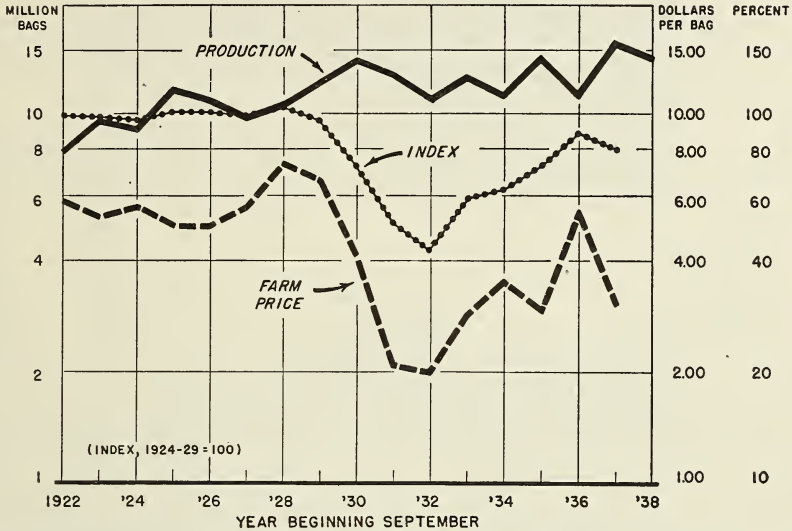


CHART 8.—PRODUCTION AND FARM PRICE OF UNITED STATES DRY BEANS AND INDEX OF INCOME OF INDUSTRIAL WORKERS, 1922-38 (1938 figures preliminary).

The principal factors influencing changes in bean prices during the period, 1922-37, were: (1) Changes in annual production of beans, and (2) changes in industrial workers' (consumer) income. Production varies considerably from year to year whereas consumers' income tends to change more slowly. The record large United States bean crop and decreased consumers' income both acted to force bean prices down in the 1937-38 season from the relatively high levels of the 1936-37 season. However, purchases of dry beans for relief distribution by the Federal Government during the 1937-38 season helped prevent a glutted market at a time when bean supplies were the largest in history.

The analysis, furthermore, indicates that had production of all beans been 10 percent less in 1935, with consumers' income at levels prevailing in that season, total returns to growers would have been larger by approximately 5 percent, and the United States farm price would have averaged about 15 percent higher. On the other hand, the level of the index of income of industrial workers was sufficiently high in the 1936-37 season to have warranted a movement of approximately 10 percent more beans than were produced in 1936. Such additional movement would have increased total returns to growers by over 2 percent, although the season average farm price would have

been lower by approximately 6 percent. In other words, demand was sufficiently strong in the 1936-37 season, because of the relatively high level of consumers' income that an additional movement of beans at a slightly lower price probably would have resulted in larger total returns to growers than were actually received.

The price analysis indicates that a change, above or below the preceding year, of 100,000 bags in the production of all beans, is associated with an average change in the United States farm price of approximately 3 cents per bag. Also, a 10-point change in the index of income of industrial workers is associated with an average change in the United States farm price of approximately 95 cents per bag.

The price analyses of the individual classes indicate the following approximate relationships between average changes in season average f. o. b. prices and average changes in production of the class when supply is considered by itself:

Commercial class:	<i>Season average change in f. o. b. price per change of 100,000 bags in production</i>	
Pea and Medium White.....	per bag--	\$0.07
Great Northern.....	do---	.13
Pinto.....	do---	.11
Standard Lima.....	do---	.35
Baby Lima.....	do---	.45
California Small White.....	do---	.26
Pink.....	do---	.54
Blackeyes.....	do---	.78
Red Kidney, wholesale, New York City.....	do---	1.00

¹ When production decreases more than 750,000 bags, price is likely to be affected by more than 11 cents per 100,000 bags.

Thus, if production increased an average of 100,000 bags above the production of the preceding year and all other price-influencing factors remained constant, bean prices would decline by approximately the amounts given. And, conversely, if production decreased an average of 100,000 bags below that of the preceding year and other factors remained constant, prices would tend to increase by approximately the amounts given above.

However, it is important to keep in mind that changes in bean prices seem to have, on the average, a greater association with changes in consumers' income than with changes in the other price-influencing factors.

Price premiums or relatively low prices for individual commercial classes of beans are associated with the supply of those classes in relation to the supply of other classes. That is, an increase in the supply of competitive beans would tend to reduce the price paid for a given class of beans, and a reduction in the supply of competitive beans would tend to increase the price for the given class.

There are undoubtedly other factors than those mentioned that influence bean prices to a greater or lesser extent at times. Better data and further study are necessary to ascertain these factors and to measure their effects.

The United States farm price of all beans averaged \$5.39 from 1922 to 1927. Prices fell sharply from the 1928 high of \$7.27 per 100 pounds to the depression low price of \$1.98 in 1932. They rose to \$5.38 in 1936 and declined to the 1937-38 price of \$3.05. The United

States farm price of all beans averaged \$3.32 per 100 pounds for the 5-year period, 1932-36.

California f. o. b. prices of Standard and Baby Lima beans have followed the same general trends since 1922. (See chart 10.) During the 5-year period, 1927-31, the Standard Lima season aver-

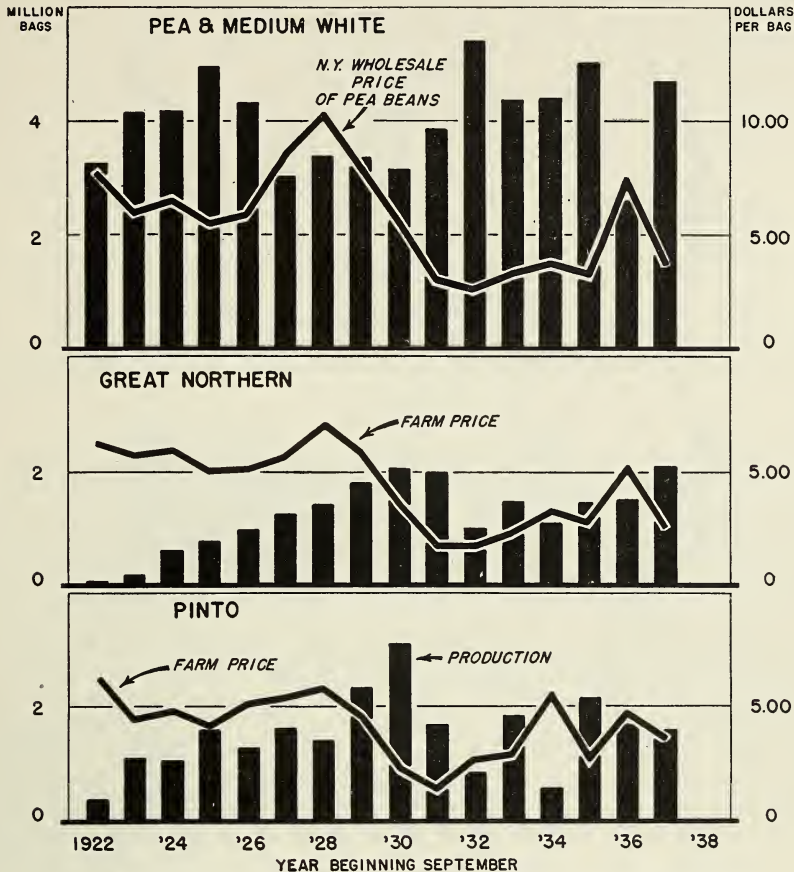


CHART 9.—PRODUCTION AND PRICES OF DRY BEANS BY CLASSES, 1922-37.

The price patterns shown above closely resemble one another, indicating substantial competition, particularly between Pea beans and Great Northern's. Prices averaged slight declines from 1922 to 1925 but increased to 1928 levels, from which high points they declined to the depression low points of 1931 and 1932, and then recovered to the relatively high levels of 1936. Pea and Great Northern bean prices for the 1937-38 season were slightly lower, and the Pinto price was slightly higher, than the corresponding average prices for the 1932-36 seasons. (Medium white beans comprise a very small part of the production shown by the bars in the top section of this chart.)

age f. o. b. price averaged \$1.18 higher than the average for Baby Limas, and the differential was increased to an average of \$1.47 per bag for the 5 years, 1932-36. The Baby Lima season average f. o. b. price, however, exceeded that of Standard Limas in 1922, 1923, and 1927 by \$2.08, \$0.02, and \$0.16, respectively. Since 1927 the differ-

ential has been in favor of Standard Limas, ranging from a low of \$0.79 in 1932 to a high of \$1.94 per bag in 1930. As indicated in chart 4, the relatively greater increase in the production of Baby Limas may have tended to develop and maintain the difference in price in favor of Standard Limas.³

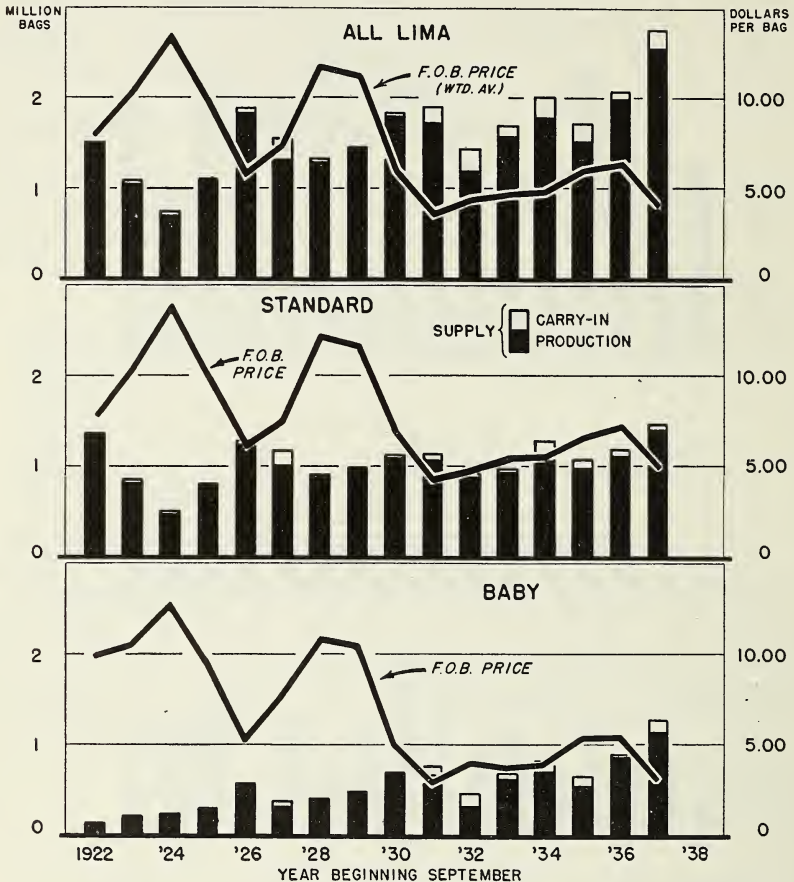


CHART 10.—PRODUCTION, CARRY-IN, AND PRICES OF DRY LIMA BEANS, 1922-37.

California f. o. b. prices of Standard and Baby Lima beans have followed the same general trends since 1922. The Standard Lima season average f. o. b. price has exceeded that of Baby Limas in all but 3 years, 1922, 1923, and 1927. Following 1927, the differential in favor of Standard Limas ranged from a low of 79 cents in 1932 to a high of \$1.94 per bag in 1930. The Standard Lima 1937-38 price is \$1.68 higher than the corresponding price for Baby Lima beans.

The New York wholesale price of Pea beans averaged \$6.27 for the 5 years, 1922-26, then rose sharply from a season average price of \$5.88 per 100-pound bag in 1926 to a price of \$10.26 in 1928, and fell away to \$2.58 per bag in 1932. The New York price averaged

³ Since 1932 yields per acre of Baby Lima beans have ranged from 0.6 to 3.2 bags greater than yields of Standard Limas.

\$4.05 per bag during the 5 years, 1932-36, and the 1937-38 season average price was \$3.59. (See chart 9.)

The pattern of the weighted average farm price of Great Northern beans is very similar to that of the New York wholesale price of Pea beans, as well as to that of the f. o. b. price of California Small Whites, for the period, 1922-37. This indicates substantial competition among these three classes of beans in United States markets.

The weighted average farm price of Pinto beans averaged \$3.93 per 100 pounds during the 5-year period, 1927-31, and \$3.72 during the more recent 5 years, 1932-36. This price series ranged from a low of \$1.47 per 100 pounds in 1931 to a high of \$6.28 per 100 pounds in 1922, during the 1922-37 period. The farm price for the 1937-38 season is \$3.92 per bag.

Price and production movements of Blackeye beans have been similar to those of Baby Limas, whereas Pink bean price and production movements have fluctuated relatively less than those of most other classes of beans.

F. o. b. prices of most dry beans tend to decline for 2 or 3 months at the beginning of the season, normally reaching bottom in November or December, and rising to the season's high point about the following July.

MOVEMENT

Domestic disappearance of dry beans in the 1937-38 season exceeded 14,000,000 bags. This is larger by almost 16 per cent than the average of 12,206,000 bags for the 5 years, 1932-36. The 1935-36 season was the only other one to have had a domestic disappearance in excess of 14,000,000 bags, and that came between 2 years of severe drought when the demand for staple food commodities was exceptional. (See table 1.)

A substantial part of the 1937-38 domestic disappearance is accounted for by the purchases by the Federal Surplus Commodities Corporation of nearly 600,000 bags of dry beans for distribution to people on relief at a time when bean supplies were the largest in history. Although it is difficult to measure the precise effects of such purchases on bean prices, it is estimated that average f. o. b. prices were increased, depending upon the class, from a few cents to as much as 50 cents per bag more than would have been the case in the absence of such relief purchases.

Total supplies of beans for the 1938-39 season are estimated to be slightly larger than the record 1937-38 total supplies of more than 16,800,000 bags. This condition results not only from the larger than average indicated 1938 production of more than 14,850,000 bags but also from the record carry-in of stocks from the 1937-38 season of approximately 2,250,000 bags. The total movement of beans in the 1938-39 season will need to exceed that of the preceding season, if carry-out on September 1, 1939, is to be smaller than that of a year earlier.

Stocks of beans on September 1, 1938, in the 4 leading bean-producing areas, with the possible exception of the Colorado (Pinto) area, were considerably above average. The carry-out of stocks of white beans were unusually heavy, particularly in the Michigan and Idaho areas. With supplies in these two areas indicated to be at

levels approximating those of the 1937-38 season, movement of white beans in the 1938-39 season will need to be much greater than average in order that stocks carried out at the end of the season may be smaller than those of the preceding season.

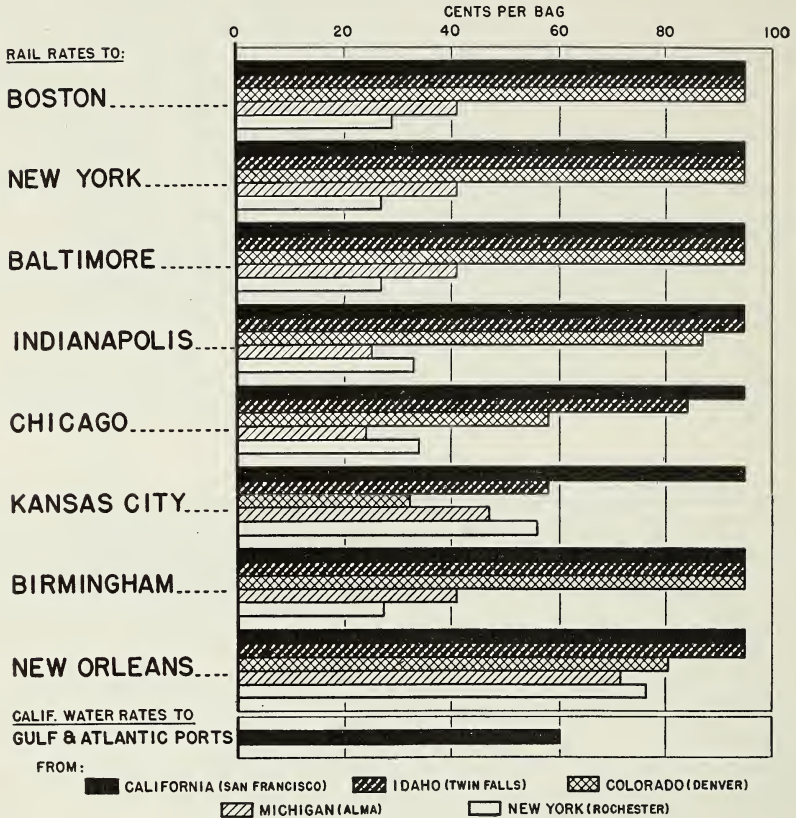


CHART 11.—CARLOT FREIGHT RATES ON DRY BEANS FROM PRODUCING AREAS TO REPRESENTATIVE DESTINATIONS. (Carlot minimum weights: 60,000 pounds from San Francisco, Twin Falls, and Denver, except Denver to Indianapolis and New Orleans, which are 36,000 and 40,000 pounds respectively; 50,000 pounds from Alma and Rochester; 36,000 pounds from San Francisco by water).

Alma, Mich., has the lowest freight rates on dry beans, as compared with the other bean-producing centers, to three of the above destinations; Rochester, N. Y., rates are lowest to three of the markets; the Denver rate is lowest to one; and the California water rate to New Orleans is less than the other rates from the above shipping points. The Idaho rates are less than the California rates only to Kansas City and Chicago.

FOREIGN TRADE

Exports⁴ of dry beans from the United States averaged greater by 176,000 bags during the 5-year period, 1927-31, than during the 5 years, 1932-36. Imports for the same two 5-year periods also averaged greater by 715,000 bags in the earlier period than in the later period.

⁴ Shipments to Puerto Rico included.

Imports exceeded exports by an average of 404,000 bags during the 1927-31 period, whereas exports averaged larger than imports by 135,000 bags during the 5 years, 1932-36.

Imports averaged 8.1 percent of average production of all beans grown in the United States during the 5-year period, 1927-31, which compares with average imports of 2.1 percent of average production during the 1932-36 period. On the other hand, exports averaged 4.7 percent of average production in the earlier 5 years, as against an average of 3.2 percent during the later 5-year period. Total imports and exports of beans in the fiscal year 1937-38 averaged, respectively, 1.0 and 2.8 percent of the 1937-38 season's production. (See table 1.)

From 1933 to 1935 an average of 66.5 percent of all dry beans exported by the United States to foreign countries were shipped to 5 countries, namely, Cuba, 31.7; Panama, 12.7; Canada, 9.5; Jamaica, 6.3; and Nicaragua, 6.3 percent. During the same 3-year period an average of 93.9 percent of all beans imported by the United States originated in Mexico, Chile, Japan, Hong Kong, and Argentina, with percentages of 36.7, 20.4, 17.7, 13.6, and 5.5, respectively.

FREIGHT RATES

To the extent that there is competition among the various commercial classes of dry beans, Michigan and New York, because of their relative proximity to the thickly populated industrial centers of Northeastern United States, have a freight-rate advantage on beans as compared with the more western producing areas to the eight representative markets given in chart 11. Based on railway carload freight rates, effective March 28, 1938, the rate from Alma, Mich., to New York City is 41 cents per 100 pounds, whereas the rate to New York City, from Denver, Colo., Twin Falls, Idaho, and San Francisco, Calif., is 95 cents per 100 pounds. To the major markets east of Chicago and to Birmingham and New Orleans, Idaho and California rail rates are the same; but the Denver rates are lower than those of Idaho and California to 4 of the 8 cities. However, the water freight rate of 60 cents per 100 pounds from California ports, via the Panama Canal, to Gulf of Mexico and Atlantic Coast ports, gives California beans the most favorable rate to New Orleans. Only the Alma, Mich., and Rochester, N. Y., rail rates are lower than the California water rate to Baltimore, New York City, and Boston. The rail rates from Rochester to three of the cities are less than the rates from Alma to those cities, but the Michigan rates are lower than those from Rochester to the other five cities.

APPENDIX

TABLE 1.—*United States supply, foreign trade, and domestic disappearance of dry edible beans, 1922-23 to 1938-39*

[Thousands of bags of 100 pounds each]

Season ¹	Production	Carry-in	Imports	Total Supply	Exports ²	Domestic Supply	Carry-out	Domestic Disappearance
	1	2	3	4	5	6	7	8
1922-23.....	7,901	500	1,574	9,975	870	9,105	700	8,405
1923-24.....	9,587	700	532	10,819	903	9,916	1,590	8,326
1924-25.....	9,059	1,590	853	11,542	738	10,804	600	10,204
1925-26.....	11,709	600	763	13,072	780	12,292	1,300	10,992
1926-27.....	11,024	1,300	631	12,955	758	12,197	1,480	10,717
1927-28.....	9,737	1,480	1,479	12,696	650	12,046	570	11,476
1928-29.....	10,574	570	903	12,047	666	11,381	250	11,131
1929-30.....	12,278	250	1,520	14,048	538	13,510	930	12,580
1930-31.....	14,133	930	808	15,871	456	15,415	2,065	13,350
1931-32.....	12,914	2,065	133	15,112	514	14,598	1,662	12,936
1932-33.....	11,005	1,662	94	12,761	510	12,251	1,250	11,001
1933-34.....	12,771	1,250	88	14,109	387	13,722	2,000	11,722
1934-35.....	11,393	2,000	348	13,741	330	13,411	1,150	12,261
1935-36.....	14,323	1,150	150	15,623	376	15,247	1,120	14,127
1936-37.....	11,405	1,120	588	13,113	343	12,770	850	11,920
1937-38.....	15,839	850	150	16,839	442	16,397	2,250	³ 14,147
1938-39 ⁴	14,859	2,250						
FIVE-YEAR AVERAGES								
1927-31.....	11,927	1,059	969	13,955	565	13,390	1,095	12,295
1932-36.....	12,179	1,436	254	13,869	389	13,480	1,274	12,206

¹ Season for imports and exports, July-June; for all other data, September-August.

² Includes shipments to Puerto Rico.

³ Includes 568,000 bags purchased by the Federal Surplus Commodities Corporation for relief distribution.

⁴ Preliminary.

SOURCE OF DATA: Column 1: U. S. Department of Agriculture, Bureau of Agricultural Economics, Mimeographed Reports, "Production of Beans in the United States, by Commercial Classes." 1922-34, January 1937; 1935-37, January 1938; 1938, General Crop Report, Nov. 1, 1938. Columns 2 and 7: Unofficial estimates, courtesy Gustave Burmeister, Bureau of Agricultural Economics. Columns 3 and 5: U. S. Department of Commerce, "Monthly Summary of Foreign Commerce of the United States." Column 4: Sum of Columns 1, 2, and 3. Column 6: Column 4 minus column 5. Column 8: Column 6 minus column 7.

TABLE 2.—*Production of dry beans in the United States by commercial classes, 1922-37*

[Thousands of bags of 100 pounds each]

Year	Pea and Medium White	Great North- ern	Califor- nia Small White	White Mar- row	White Kidney	Total White	Stand- ard Lima	Baby Lima	Total Lima
	1	2	3	4	5	6	7	8	9
1922.....	3, 233	29	325	82	63	3, 732	1, 368	140	1, 508
1923.....	4, 120	165	360	91	71	4, 807	830	220	1, 050
1924.....	4, 121	594	77	176	78	5, 046	480	225	705
1925.....	4, 944	739	200	198	51	6, 132	800	300	1, 100
1926.....	4, 318	922	180	63	63	5, 546	1, 250	580	1, 830
1927.....	3, 031	1, 208	280	81	49	4, 649	1, 010	310	1, 320
1928.....	3, 358	1, 387	424	103	29	5, 301	890	401	1, 291
1929.....	3, 346	1, 747	415	135	42	5, 685	987	486	1, 473
1930.....	3, 141	2, 011	489	180	41	5, 862	1, 102	696	1, 798
1931.....	3, 856	1, 956	429	201	111	6, 553	1, 064	663	1, 727
1932.....	5, 403	992	226	101	58	6, 780	872	322	1, 194
1933.....	4, 391	1, 440	417	128	80	6, 456	943	630	1, 573
1934.....	4, 396	1, 084	402	139	142	6, 163	1, 072	708	1, 780
1935.....	5, 003	1, 441	351	154	109	7, 058	989	536	1, 525
1936.....	2, 599	1, 470	502	125	43	4, 739	1, 119	876	1, 995
1937.....	4, 688	2, 090	1, 024	129	105	8, 036	1, 419	1, 142	2, 561
FIVE-YEAR AVERAGES									
1927-31.....	3, 346	1, 590	407	140	54	5, 610	1, 011	511	1, 522
1932-36.....	4, 358	1, 285	380	129	86	6, 239	999	614	1, 613

Year	Red Kidney	Small Red	Cran- berry	Pink	Yellow Eye	Pinto	Black- eye	Total Col- ored	Other ¹ and Seed	Total U. S.
	1	2	3	4	5	6	7	8	9	10
1922.....	510	75	75	661	118	352	250	2, 041	620	7, 901
1923.....	645	60	143	670	132	1, 079	275	3, 004	726	9, 587
1924.....	881	73	70	282	171	1, 034	277	2, 788	560	9, 099
1925.....	862	163	60	653	106	1, 597	450	3, 891	586	11, 709
1926.....	698	113	73	599	96	1, 287	450	3, 316	332	11, 024
1927.....	490	220	110	553	109	1, 597	300	3, 379	389	9, 737
1928.....	642	282	106	575	95	1, 402	428	3, 530	452	10, 574
1929.....	442	393	113	619	100	2, 319	514	4, 500	620	12, 278
1930.....	376	520	128	625	81	3, 096	852	5, 678	795	14, 133
1931.....	651	474	159	436	137	1, 687	459	4, 003	631	12, 914
1932.....	465	250	94	516	78	859	275	2, 537	494	11, 005
1933.....	573	279	151	595	105	1, 828	587	4, 118	624	12, 771
1934.....	563	267	242	485	174	579	525	2, 835	615	11, 393
1935.....	631	292	413	843	146	2, 147	615	5, 087	653	14, 323
1936.....	675	204	223	447	100	1, 708	765	4, 122	549	11, 405
1937.....	806	290	207	456	149	1, 608	857	4, 373	869	15, 839
FIVE-YEAR AVERAGES										
1927-31.....	520	378	123	562	104	2, 020	511	4, 218	577	11, 927
1932-36.....	581	258	225	577	121	1, 424	553	3, 740	587	12, 179

¹ Includes varieties other than those listed in this table.

SOURCE OF DATA: U. S. Department of Agriculture, Bureau of Agricultural Economics, 1922-34, "Production of Beans in the United States, by Commercial Classes," 1922-34, January 1937; 1935-37, January 1938.

TABLE 3.—*Production of dry beans by areas, 1922-38*

[Thousands of bags of 100 pounds each]

Year	Michigan and Others ¹	California	Idaho and Others ²	Colorado and Others ³	Other States ⁴	Total United States
	1	2	3	4	5	6
1922.....	3,976	3,100	288	487	50	7,901
1923.....	4,927	2,741	644	1,202	73	9,587
1924.....	5,465	1,569	872	1,133	60	9,099
1925.....	6,195	2,667	1,084	1,701	62	11,709
1926.....	5,175	3,314	1,139	1,346	50	11,024
1927.....	3,716	2,805	1,552	1,631	33	9,737
1928.....	4,160	3,132	1,829	1,426	27	10,574
1929.....	4,061	3,391	2,377	2,415	34	12,278
1930.....	3,769	4,264	2,859	3,197	44	14,133
1931.....	4,903	3,467	2,773	1,741	30	12,914
1932.....	6,120	2,484	1,506	868	27	11,005
1933.....	5,305	3,520	2,110	1,809	27	12,771
1934.....	5,488	3,684	1,721	1,479	21	11,393
1935.....	6,347	3,965	2,091	1,896	24	14,323
1936.....	3,608	4,081	2,121	1,585	10	11,405
1937.....	5,938	5,369	3,077	1,431	24	15,839
1938 ⁵	6,210	4,352	2,448	1,819	30	14,859
FIVE-YEAR AVERAGES						
1927-31.....	4,122	3,412	2,278	2,082	34	11,927
1932-36.....	5,374	3,547	1,910	1,327	22	12,179

¹ Michigan, New York, Maine, Vermont, and Wisconsin.⁴ Minnesota and Oregon.² Idaho, Montana, Wyoming, and Nebraska.⁵ Preliminary.³ Colorado, New Mexico, Arizona, and Kansas.

SOURCE OF DATA: U. S. Department of Agriculture, Bureau of Agricultural Economics, "Production of Beans in the United States, by Commercial Classes," 1922-34, January 1937; 1935-37, January 1938; 1938, "General Crop Report," November 1938.

TABLE 4.—*Acreage (harvested) of dry beans by areas, 1924-38*

[Thousands of acres]

Year	Michigan and Others ¹	California	Idaho and Others ²	Colorado and Others ³	Other States ⁴	Total U. S.
	1	2	3	4	5	6
1924.....	801	206	99	468	10	1,584
1925.....	792	240	109	466	8	1,615
1926.....	727	305	121	580	7	1,740
1927.....	659	296	146	506	5	1,612
1928.....	615	307	186	538	5	1,651
1929.....	695	339	219	574	13	1,840
1930.....	841	363	255	690	10	2,159
1931.....	787	334	259	559	8	1,947
1932.....	694	225	127	377	8	1,431
1933.....	730	275	176	540	8	1,729
1934.....	796	299	150	207	8	1,460
1935.....	730	339	194	615	7	1,885
1936.....	622	347	170	452	3	1,594
1937.....	659	386	244	427	5	1,721
1938 ⁵	682	349	191	462	7	1,691
FIVE-YEAR AVERAGES						
1927-31.....	719	328	213	573	8	1,842
1932-36.....	714	297	163	438	7	1,620

¹ Michigan, New York, Maine, Vermont, and Wisconsin.⁴ Minnesota and Oregon.² Idaho, Montana, Wyoming, and Nebraska.⁵ Preliminary for 1938.³ Colorado, New Mexico, Arizona, and Kansas.

SOURCE OF DATA: U. S. Department of Agriculture, Bureau of Agricultural Economics, Crop Reporting Board, 1924-35, inclusive, "Revisions, Annual Legume Crops and All Tame Hay Acreage, Yield, and Production, Crop Years 1924-35," January 1937, pp. 19 and 20. 1936-37, "General Crop Report," December 1937, p. 54. 1938, "General Crop Report," July 1938.

TABLE 5.—*Prices¹ of principal classes of dry beans, United States farm price, and index of income of industrial workers, 1922-37*

[Dollars per 100 pounds]

Year	F. o. b. California ²						Pea Beans whole-sale New York City	Great North-ern weighted average farm price	Pinto weighted average farm price	All Beans United States farm price	Index of income of in-dustrial workers (1924-29=100)
	Stand-ard Lima	Baby Lima	All Lima	Cali-fornia Small White	Pink	Black-eye					
	1	2	3	4	5	6	7	8	9	10	11
1922-----	7.83	9.91	8.02	6.37	5.40	4.76	7.68	6.17	6.28	5.82	<i>Percent</i> 98.2
1923-----	10.50	10.52	10.50	6.19	4.86	6.76	5.92	5.68	4.43	5.36	97.6
1924-----	13.88	12.74	13.52	7.41	7.52	9.64	6.42	5.89	4.80	5.64	96.2
1925-----	9.89	9.54	9.79	6.04	5.60	5.72	5.44	4.92	4.16	5.00	101.0
1926-----	6.10	5.16	5.81	6.70	5.10	3.89	5.88	5.01	5.19	4.99	100.9
1927-----	7.48	7.64	7.52	7.59	5.56	4.93	8.55	5.68	5.49	5.55	98.2
1928-----	12.24	10.80	11.79	9.17	6.64	³ 9.47	10.26	7.04	5.78	7.33	105.5
1929-----	11.71	10.48	11.30	7.91	5.93	8.36	7.87	5.79	4.61	6.77	95.9
1930-----	6.85	4.91	6.10	4.66	3.86	3.33	5.51	3.43	2.30	4.20	73.2
1931-----	4.26	2.84	3.09	2.72	2.95	2.58	2.99	1.64	1.47	2.13	51.3
1932-----	4.77	3.98	4.51	3.21	3.04	3.35	2.58	1.67	2.61	1.98	43.7
1933-----	5.51	3.73	4.77	3.45	3.19	2.92	3.31	2.26	2.99	2.78	58.6
1934-----	5.57	3.93	4.90	3.52	5.41	4.04	3.73	3.24	5.52	3.52	62.8
1935-----	6.62	5.33	6.13	3.62	3.09	4.55	3.29	2.75	2.71	2.93	72.6
1936-----	7.23	5.37	6.43	6.47	4.83	4.99	7.32	5.16	4.78	5.38	89.1
1937-----	4.87	3.19	4.09	3.04	4.44	2.91	3.59	2.46	3.92	3.05	⁴ 73.7
FIVE-YEAR AVERAGES											
1927-31-----	8.51	7.33	8.08	6.41	4.99	5.73	7.04	4.72	3.93	5.20	84.8
1932-36-----	5.94	4.47	5.35	4.05	3.91	3.97	4.05	3.02	3.72	3.32	65.4

¹ Simple arithmetic season average prices, September-August, unless otherwise indicated.² For choice re-cleaned beans.³ Simple average, September-June.⁴ Simple average, September-July.

SOURCE OF DATA: Columns 1 to 6, inclusive: Compiled from quotations in California Fruit News, San Francisco, weekly. Columns 7 to 11, inclusive: U. S. Department of Agriculture, Bureau of Agricultural Economics. Column 7: Compiled from New York Producers' Price Current, daily, by Division of Statistical and Historical Research. Columns 8 and 9: State official farm prices combined into class weighted average price, simple season average of monthly averages weighted by season production of each State included. Great Northern States included: Idaho, Montana, Wyoming, and Nebraska; Pinto States included: Colorado and New Mexico. Compiled by Economic Analysis Unit. Column 10: Division of Crop and Livestock Estimates. Column 11: Division of Statistical and Historical Research.

TABLE 6.—*Production of pea, medium, and small white beans by States, 1927-37*

[Thousands of bags of 100 pounds each]

Year	Michigan ¹	New York ¹	California ²	Other States	Total
	1	2	3	4	5
1927-----	2,726	196	280	109	3,311
1928-----	2,935	233	424	190	3,782
1929-----	2,905	306	415	135	3,761
1930-----	2,613	310	489	218	3,630
1931-----	3,208	506	429	142	4,285
1932-----	4,723	566	226	114	5,629
1933-----	3,803	443	417	145	4,808
1934-----	3,819	456	402	121	4,798
1935-----	4,585	358	351	60	5,354
1936-----	2,249	249	502	101	3,101
1937-----	4,080	468	1,024	140	5,712
FIVE-YEAR AVERAGES					
1927-31-----	2,877	310	407	159	3,754
1932-36-----	3,836	414	380	108	4,738

¹ Pea and Medium White.² California Small White.

SOURCE OF DATA: U. S. Department of Agriculture, Bureau Agricultural Economics. "Production of Beans in the United States, by Commercial Classes", 1927-34, January 1937; 1935-37, January 1938.

TABLE 7.—*Production of pinto beans, by States, 1927-37*

[Thousands of bags of 100 pounds each]

Year	Colorado	New Mexico	California	Arizona	Other States	Total
	1	2	3	4	5	6
1927.....	1,031	494	(¹)	20	52	1,597
1928.....	946	337	51	15	53	1,402
1929.....	1,204	968	51	12	84	2,319
1930.....	2,286	576	72	17	145	3,096
1931.....	857	745	15	25	45	1,687
1932.....	440	343	24	23	29	859
1933.....	1,178	518	62	19	51	1,828
1934.....	367	67	121	23	1	579
1935.....	1,133	647	285	29	53	2,147
1936.....	1,030	432	130	37	79	1,708
1937.....	687	600	160	30	131	1,608
FIVE-YEAR AVERAGES						
1927-31.....	1,265	624	47	18	76	2,020
1932-36.....	830	401	124	26	42	1,424

¹ None reported.

SOURCE OF DATA: U. S. Department of Agriculture, Bureau of Agricultural Economics, "Production of Beans in the United States, by Commercial Classes," 1927-34, January 1937; 1935-37, January 1938.

TABLE 8.—*Production of great northern beans, by States, 1927-37*

[Thousands of bags of 100 pounds each]

Year	Idaho	Wyoming	Montana	Nebraska	Colorado	Total
	1	2	3	4	5	6
1927.....	801	113	287	(¹)	7	1,208
1928.....	783	189	359	15	41	1,387
1929.....	1,061	235	406	25	20	1,747
1930.....	1,149	360	394	40	68	2,011
1931.....	1,255	392	242	50	17	1,956
1932.....	612	108	192	75	5	992
1933.....	817	285	239	87	12	1,440
1934.....	655	253	124	48	4	1,084
1935.....	728	375	225	90	23	1,441
1936.....	879	322	146	116	7	1,470
1937.....	1,236	414	213	211	16	2,090
FIVE-YEAR AVERAGES						
1927-31.....	1,010	258	338	26	31	1,662
1932-36.....	738	269	185	83	10	1,285

¹ None reported.

SOURCE OF DATA: U. S. Department of Agriculture, Bureau of Agricultural Economics, "Production of Beans in the United States, by Commercial Classes", 1927-34, January 1937; 1935-37, January 1938.

TABLE 9.—*Carload freight rates on dry edible beans*

[Rates in cents per 100 pounds]

To—	From—									
	San Francisco, Calif.		Denver, Colo.		Twin Falls, Idaho		Alma, Mich.		Rochester, N. Y.	
	1	2	3	4	5	6	7	8	9	10
	Rate	Min. Wt.	Rate	Min. Wt.	Rate	Min. Wt.	Rate	Min. Wt.	Rate	Min. Wt.
Baltimore, Md.	110	40,000	110	40,000	110	40,000	1 48	20,000	1 33	20,000
Birmingham, Ala.	95	60,000	95	60,000	95	60,000	1 41	50,000	1 27	50,000
Boston, Mass.	110	40,000	110	40,000	110	40,000	76	36,000	81	36,000
Chicago, Ill.	95	60,000	95	60,000	95	60,000	59	50,000	64	50,000
Indianapolis, Ind.	110	40,000	110	40,000	110	40,000	1 48	20,000	1 35	20,000
Kansas City, Mo.	95	60,000	95	60,000	95	60,000	1 41	50,000	1 29	50,000
New York, N. Y.	110	40,000	2 68	40,000	2 95	40,000	1 28	20,000	1 40	20,000
New Orleans, La.	95	60,000	2 58	60,000	2 84	60,000	1 24	50,000	1 34	50,000
	110	40,000	87	36,000	110	40,000	1 30	20,000	1 38	20,000
	95	60,000			95	60,000	1 25	50,000	1 33	50,000
	110	40,000	2 42	40,000	2 68	40,000	65	36,000	56	50,000
	95	60,000	2 32	60,000	2 58	60,000	47	50,000		
	110	40,000	110	40,000	110	40,000	1 48	20,000	1 33	20,000
	95	60,000	95	60,000	95	60,000	1 41	50,000	1 27	50,000
	110	40,000	2 80	40,000	2 106	40,000	90	36,000	1 97	36,000
	95	60,000			95	60,000	1 71	50,000	1 76	50,000

¹ Published to expire June 30, 1938, unless sooner cancelled, changed, or extended.² Published to expire Aug. 31, 1938, unless sooner cancelled, changed, or extended.

Source of data: Interstate Commerce Commission, Bureau of Traffic, Section of Tariffs, Rate Branch.

TABLE 10.—*Dry beans: United States imports from, and exports to, principal countries of origin and destination, 1933-35*¹

Countries of origin	3-year average imports 1933-35	Percent-age	Countries of destination	3-year average exports 1933-35	Percent-age
	1	2		3	4
	Thousand bags			Thousand bags	
Mexico	81	36.7	Cuba	20	31.7
Chile	45	20.4	Panama	8	12.7
Japan	39	17.7	Canada	6	9.5
Hong Kong	30	13.6	Jamaica	4	6.3
Argentina	12	5.5	Nicaragua	4	6.3
Netherlands	3	1.4	France	2	3.2
Italy	2	.9	Mexico	2	3.2
China	2	.9	Netherlands W. I.	2	3.2
Canada	1	.5	Australia	1	1.6
Greece	1	.5	Barbados	2	1.6
Kwantung	1	.5	British Honduras	1	1.6
Philippine Islands	2	.5	French Oceania	1	1.6
Other countries	2	.9	Philippine Islands	1	1.6
			Other countries	10	15.9
Total	220	100.0	Total	63	100.0

¹ Calendar years.² 2-year average.

SOURCE OF DATA: U. S. Department of Commerce, Commerce Year Book and Monthly Summary of Foreign Commerce.

